2024

AP® Human Geography

Sample Student Responses and Scoring Commentary Set 1

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Free-Response Question 3

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Question 3: Two Stimuli — 7 points

(A) **Identify ONE city on the map that is both a metacity and a world city.** **1 point**

Accept one of the following:

- A1. Beijing, Shanghai, or Tokyo

(B) **Describe the spatial pattern of world cities shown on the map.** **1 point**

Accept one of the following:

- B1. World cities are located in North America, Europe, and/or Asia.
- B2. Most world cities are located in the Northern Hemisphere or the Eastern Hemisphere.
- B3. Many world cities are located on or near a coastline.
- B4. World cities are most densely clustered in Europe.
- B5. World cities are located in more economically developed areas.
- B6. There are no world cities in Africa, South America, northern Asia, and/or Australia.

(C) **Compare the concept of a metacity with the concept of a world city. (Response must include both concepts in the comparison.)** **1 point**

Accept one of the following:

- C1. Metacities are determined by population size (over 20 million people), whereas world cities are determined by their importance (e.g., economic, cultural).
- C2. Most metacities are located in less developed countries, whereas most world cities are located in more developed countries.
- C3. Metacities have attained their status through rapid rural-to-urban migration and/or rapid urban growth, whereas world cities have attained status through their position as major centers in the global economy.
- C4. World cities function at the top of the world's urban hierarchy and/or drive globalization, whereas metacities primarily have national economic and/or cultural importance.

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(D) **Explain ONE reason why the cities shown on the table have higher city GDP per capita than the country GDP per capita.** **1 point**

Accept one of the following:

- D1. These cities are more economically productive than other parts of the country because they offer greater opportunities and/or more goods or services.
- D2. These cities function as centers of the service economy (e.g., tertiary, quaternary, quinary, technology) that generate more economic value or output.
- D3. Higher-income residents often cluster in these cities due to the services available and/or the increased variety of social opportunities (e.g., entertainment, sports, charitable organizations).
- D4. People in these cities are less likely to work in primary sector activities (e.g., agriculture, resource extraction) than people outside of cities.

(E) **Explain ONE way population growth in a metacity may challenge environmental sustainability.** **1 point**

Accept one of the following:

- E1. By consuming natural resources (e.g., water, energy, forests) faster than they can be replaced, creating a larger ecological footprint, larger energy footprint, or larger carbon footprint.
- E2. By generating large amounts of waste and/or pollution (e.g., air pollution, water pollution, solid waste, sanitation waste), causing environmental degradation or contamination.
- E3. Population growth may cause local biodiversity loss, habitat loss, and/or pollution through land use change.
- E4. By increasing carbon emissions (e.g., through energy use, vehicular use, construction) and/or contributing to climate change, affecting local, regional, and/or global ecosystems.

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(F) **Explain ONE reason why migrants to metacities may have difficulty obtaining housing.** **1 point**

Accept one of the following:

- F1. Migrants may encounter high housing costs or may not be able to find vacancies due to high population densities.
- F2. Migrants may encounter high housing costs or may not be able to find vacancies due to a large or growing urban population.
- F3. Available land for new housing may be on the urban periphery, far from employment locations, schools, transit, and/or service centers.
- F4. Access to housing may be tightly controlled by a small number of owners or agents who set prices and/or discriminate against migrants.
- F5. Available land for new housing may be located in potentially hazardous areas, zones of disamenity, and/or inaccessible places.

(G) **Using the data from the table, explain the relationship between a city's level of economic development and the city's percent population growth over time.** **1 point**

Accept one of the following:

- G1. Lower city GDP per capita (e.g., Cairo, Dhaka) corresponds with, or has an inverse relationship with, higher percentage population growth.
- G2. Higher city GDP per capita (e.g., New York City, Paris) corresponds with, or has an inverse relationship with, lower percentage population growth.
- G3. Lower city GDP per capita (e.g., Cairo, Dhaka) corresponds with a city that is in the early stages of the demographic transition model, when population growth is high.
- G4. Higher city GDP per capita (e.g., New York City, Paris) corresponds with a city that is in the later stages of the demographic transition model, when population growth is low or negative.
- G5. Cairo and/or Dhaka are metacities where higher population growth corresponds with, or has an inverse relationship with, lower city GDP per capita.
- G6. New York City and/or Paris are world cities where lower population growth corresponds with, or has an inverse relationship with, higher city GDP per capita.
- G7. For cities in the table, economic productivity may encourage population growth due to pull factors (e.g., employment opportunities, business opportunities, or investment opportunities).

Total for question 3: 7 points

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Important: Completely fill in the circle that corresponds to the question you are answering on this page.

Question 1 ○ Question 2 ○ Question 3 ●

Begin your response to each question at the top of a new page. Do not skip lines.

3a) Tokyo is both a metacity and world city.

3b) World cities are often found on coastlines of countries, such as Los Angeles is on the coast of the United States and Tokyo is on the coast of Japan. They are also often farther away from other world cities in the same country, such as Los Angeles being far from New York City, and Hong Kong being far from Beijing.

3c) A metacity is based off of having a population over 20 million people, while a world city is not strictly based off of population. World cities depend on the influence in economics and in social aspects, while metacities doesn't take any factors besides a population count into perspective. Both cities play large roles in their country.

3d) Cities shown on the table have a higher GDP per capita than the country GDP per capita because a lot of jobs and economic development is concentrated in cities. There are more job opportunities, more important businesses, and more people.

3e) Population growth in a metacity may challenge environmental sustainability because as the city grows, the more areas there will be that are cleared out to build new infrastructure for the city. Trees will be cut down, ecosystems will be destroyed, and biodiversity will decrease. It will be harder to sustain the environment with growing populations.

3f) Migrants moving to metacities may have trouble finding housing because they may not be able to afford the homes there. Having so many people in a city increases the demand for housing, which then causes the prices of homes to go up. Migrants that are newly coming into the city may not have much money or a job,

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Question 1 ○ Question 2 ○ Question 3 ●

Begin your response to each question at the top of a new page. Do not skip lines.

so they will not be able to pay for a place to live.

3g) If a city has a high level of economic development, then their population growth over time is relatively low. In the chart, New York City grew by only 5% in 20 years, but has ~~the highest city GDP per capita compared to the other cities~~ a high GDP per capita. Paris also did not have much population growth ~~but~~ (only 13%), but it has the highest city GDP per capita, which shows ~~economic~~ high levels of economic development. If a city has a low level of economic development, then their population growth is high. Having new people come into the city can put a little strain on economic growth. For example, Dhaka had 104% population growth, but they had a much lower ~~GDP~~ city GDP per capita compared to cities like Paris. The same is true for Cairo, who experienced 51% population growth, but has a low city GDP per capita.

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● Q5400/07

Important: Completely fill in the circle that corresponds to the question you are answering on this page.

Question 1 ○ Question 2 ○ Question 3 ●

Begin your response to each question at the top of a new page. Do not skip lines.

Part A: Tokyo is both a metacity and world city.

Part B: World cities tend to be located in core countries, along with being near the coast.

Part C: While metacities may have importance on a national scale, global cities are important or a global scale.

Part D: Due to their size, population, and economic productivity they have a higher GDP per capita.

Part E: Metacities may not plan to grow sustainably, they may have a large population who dosent use public transportation, and instead uses ~~automobiles~~ automobiles.

Part F: They may have accepted a job where they are not paid enough to afford housing, there may be limited housing available, or housing may just be too expensive.

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Question 1 ○ Question 2 ○ Question 3 ●

Begin your response to each question at the top of a new page. Do not skip lines.

Part Gi The more economically developed a city is, the lower ~~percent~~ the percent population growth is, as is shown by how Paris and NYC have lower growth rates than Cairo and Dahka.

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● **Important:** Completely fill in the circle that corresponds to the question you are answering on this page.

Question 1 ○ Question 2 ✕ Question 3 ●

Begin your response to each question at the top of a new page. Do not skip lines.

A. Tokyo is both a Metacity & a world city.
B. In Europe, world cities tend to be clustered together and located where the population is also ~~eath~~ clustered.
C. A metecity is a city with a total population higher than 20 million people. A world city is a very popular city that is known across the world and has a very high gross domestic product per capita both at the city and country scale.
E. Population growth may challenge environmental sustainability from, if it is overpopulated then it would be hard for the area to have enough resources to care for the area and provide for it's needs.
F. Migrants may have difficulty because prices may be raised due to the population so it could be difficult to pay rent or taxes.
G. The city's level of economic development increases as the city's percent population grows over time.
D. This is because city's ~~population levels~~ tend to have a higher population and if you were to include rural areas as well, that would not add much. So depending on the scale, it differs with the GDP. The country scale includes both rural & urban areas but the city scale is just urban areas, so in this case the city level has a greater population density giving it a higher GDP.

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Question 3

Note: Student samples are quoted verbatim and may contain spelling and grammatical errors.

Overview

In this two-stimulus question, students were expected to interpret and use data from a map and a table that featured information about metacities and top-tier world cities. The map depicted data at the global scale and showed the locations of both metacities and top-tier world cities in 2020. The table featured data from four selected cities (Cairo, Dhaka, New York City, Paris), including the cities' population in the years 2000 and 2020, their population growth from the years 2000 to 2020, the city GDP per capita in the year 2020, and the cities' corresponding country GDP per capita in the year 2020.

This question was developed to demonstrate students' understanding of key concepts and geographic processes, primarily from Unit 6 (Cities and Urban Land-Use Patterns and Processes) and Unit 7 (Industrial and Economic Development Patterns and Processes). This question required students to apply skills from Skill Category 1 (Concepts and Processes), Skill Category 2 (Spatial Relationships), Skill Category 3 (Data Analysis), and Skill Category 5 (Scale Analysis).

In part A students were asked to interpret the world map and identify one city that is both a metacity and a world city.

In part B students were asked to describe the spatial pattern of world cities shown on the map.

Because urbanization processes vary across geographical locations and result in different spatial outcomes, in part C students were asked to compare the concept of a metacity with the concept of a world city. Students were instructed to include a comparison of both concepts in their response.

Large urban areas tend to be the centers of economic activity and provide significant opportunities for residents. In part D students were instructed to explain one reason why the cities shown on the table have higher GDP per capita than their respective country GDP per capita.

Large urban areas often experience economic, social, and environmental challenges. In part E students were asked to explain one way population growth in a metacity may challenge environmental sustainability.

Because a city's infrastructure directly affects its spatial patterns of economic and social development, in part F, students were asked to explain why migrants to metacities may have difficulty obtaining housing.

In part G students were asked to use the data from the table to explain the relationship between a city's level of economic development and the city's percent population growth over time.

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Question 3 (continued)

Sample: A
Score: 7

The response for part A earned 1 point because it correctly identifies one city on the map that is both a metacity and a world city as "Tokyo," as stated in A1.

The response for part B earned 1 point because it correctly describes the spatial pattern of world cities shown on the map. The response correctly states that "world cities are often found on coastlines of countries." This response corresponds with world cities being located on or near a coastline, as stated in B3.

The response for part C earned 1 point because it correctly compares the concept of a metacity with the concept of a world city. The response correctly states that "a metacity is based off of having a population over 20 million people. World cities depend on the influence in economics." This corresponds to the comparison of metacity population size and world city importance, as stated in C1.

The response for part D earned 1 point because it correctly explains one reason why the cities shown on the table have higher city GDP per capita than the country GDP per capita. The response correctly explains that "because a lot of jobs and economic development is concentrated in cities." This response corresponds with the listed cities being more economically productive than other parts of the country because they offer greater opportunities and/or more goods or services, as stated in D1.

The response for part E earned 1 point because it correctly explains one way population growth in a metacity may challenge environmental sustainability. The response correctly explains that "the more areas that will be cleared out to build new infrastructure for the city. Trees will be cut down, ecosystems will be destroyed." This response corresponds to population growth leading to the loss of local biodiversity, as stated in E3.

The response for part F earned 1 point because it correctly explains why migrants to metacities may have difficulty obtaining housing. The response correctly explains that "having so many people in a city increases the demand for housing, which then causes the prices of houses to go up." This response explains how a high population or growing population in the city affects the housing costs, as stated in F1.

The response for part G earned 1 point for correctly using the data from the table to explain the relationship between a city's level of economic development and the city's percent population growth over time. The response correctly explains that "If a city has a high level of economic development, then their population growth over time is relatively low. In the chart, New York City grew by only 5% in 20 years, but has a high GDP per capita." The response explains that a higher GDP has an inverse relationship with a lower population growth and providing an example of New York City's economic growth as well as GDP demonstrates the use of the table, as stated in G2.

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Question 3 (continued)

Sample: B
Score: 4

The response for part A earned 1 point because it correctly identifies one city on the map that is both a metacity and a world city as "Tokyo," as stated in A1.

The response for part B earned 1 point because it correctly describes the spatial pattern of world cities shown on the map. The response correctly describes world cities as tending to "be located ... near the coast." This response corresponds with world cities being located on or near a coastline, as stated in B3.

The response for part C earned 1 point because it correctly compares the concept of a metacity with the concept of a world city. The response correctly explains that "metacities have importance on a national scale, global cities are important on a global scale." This response corresponds with world cities function at the top of the world's urban hierarchy and/or drive globalization, whereas metacities primarily have a national economic and/or cultural importance, as stated in C4.

The response for part D did not earn a point because it incorrectly explains one reason why the cities shown on the table have higher city GDP per capita than the country GDP per capita. The response incorrectly explains that "due to their size, population, and economic productivity they have a higher GDP per capita." The response would have earned a point if it had explained that these cities are more economically productive than other parts of the country because they offer greater opportunities and/or more goods or services, as stated in D1.

The response for part E did not earn a point because it incorrectly explains one way population growth in a metacity may challenge environmental sustainability. The response incorrectly explains that metacities "may have a large population who dosent use public transportation, and instead uses automobiles." The response would have earned a point if it had explained that population growth in a metacity may challenge environmental sustainability by consuming natural resources faster than they can be replaced, creating a larger ecological footprint, larger energy footprint, or larger carbon footprint, as stated in E1.

The response for part F did not earn a point because it incorrectly explains one reason why migrants to metacities may have difficulty obtaining housing. While the response correctly explains that "there may be limited housing available, or housing may just be too expensive," the response does not explain whether this may be due to higher population densities or due to a growing urban population. The response would have earned a point if it had explained that migrants may encounter high housing costs or may not be able to find vacancies due to high population densities, large populations, or growing populations, as stated in F1 and F2.

The response for part G earned 1 point because it correctly uses the data from the table to explain the relationship between a city's level of economic development and the city's percent population growth over time. The response correctly explains, "the more economically developed a city is, the lower the percent population growth is, as is shown by how Paris and NYC have lower growth rates than Cairo and Dahka." This response corresponds with higher city GDP per capita (e.g., New York

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Question 3 (continued)

City, Paris) or having an inverse relationship with a lower percentage of population growth, as stated in G2.

Sample: C
Score: 3

The response for part A earned 1 point because it correctly identifies one city on the map that is both a metacity and a world city as "Tokyo," as stated in A1.

The response for part B earned 1 point because it correctly describes the spatial pattern of world cities shown on the map. The response correctly states that "in Europe, world cities tend to be clustered together," which corresponds with world cities being most densely clustered in Europe, as stated in B4.

The response for part C earned 1 point because it correctly compares the concept of a metacity with the concept of a world city. The response correctly states, "a metacity is a city with a total population higher than 20 million people. A world city is a … city that is known across the world and has a very high gross domestic product per capita." This response corresponds with metacities being determined by population size, whereas world cities are determined by their importance, as stated in C1.

The response for part D did not earn a point because it incorrectly explains one reason why the cities shown on the table have higher city GDP per capita than the country GDP per capita. The response incorrectly explains that "city's tend to have a higher population and if you were to include rural areas as well, that would not add much. So depending on the scale, it differs with the GDP." The response would have earned a point if it had explained that these cities are more economically productive than other parts of the country because they offer greater opportunities and/or more goods or services, as stated in D1.

The response for part E did not earn a point because it incorrectly explains one way population growth in a metacity may challenge environmental sustainability. The response incorrectly explains that "if it is overpopulated then it would be hard for the area to have enough resources," which is not detailed or specific enough to earn a point. The response would have earned a point if it had explained that population growth causes local biodiversity loss, habitat loss, and/or pollution through land use change, as stated in E3.

The response for part F did not earn a point because it incorrectly explains one reason why migrants to metacities may have difficulty obtaining housing. The response explains that "migrants may have difficulty because prices may be raised due to the population so it could be difficult to pay rent or taxes." The response explained that prices may increase, but it does not make the connection to a large or growing population size, as stated in F2.

The response for part G did not earn a point for using the data from the table to explain the relationship between a city's level of economic development and the city's percent population growth over time. The response incorrectly explains "the city's level of development increases as the city's percent population grows over time." The response would have earned a point if it had explained

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that lower city GDP per capita corresponds with, or has an inverse relationship with, higher percentage population growth, as stated in G1.

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